

What is claimed:

1 **1.** A compound comprising: **(a)** a hormone domain selected from the group
2 consisting of gonadotropin-releasing hormone, I-LHRH-III, bLH, estrogen, testosterone,
3 luteinizing hormone, chorionic gonadotropin, follicle stimulating hormone, melanocyte-
4 stimulating hormone, estradiol, dopamine, somatostatin, and analogues of these
5 hormones; and **(b)** a lytic peptide domain.

1 **2.** A compound as recited in Claim 1, wherein said hormone domain is
2 bonded directly to said lytic peptide domain, without an intermediate linking domain
3 joining said hormone domain to said lytic peptide domain.

1 **3.** A compound as recited in Claim 1, wherein said lytic peptide domain is
2 selected from the group consisting of a cecropin peptide, a melittin peptide, a defensin
3 peptide, a magainin peptide, a sarcotoxin peptide, and analogs of said peptides.

1 **4.** A compound as recited in Claim 1, wherein said lytic peptide domain
2 comprises hecate.

1 **5.** A compound as recited in Claim 1, wherein said hormone domain
2 comprises I-LHRH-III.

1 **6.** A compound as recited in Claim 1, wherein said hormone domain
2 comprises gonadotropin-releasing hormone.

1 **7.** A compound as recited in Claim 1, wherein said compound has the
2 sequence SEQ. ID NO. 3 or SEQ. ID NO. 4.

1 **8.** A compound as recited in Claim 1, wherein said compound has the
2 sequence SEQ. ID NO. 12 or SEQ. ID NO. 15.

1 **9.** A compound as recited in Claim 1, wherein said hormone domain
2 comprises estrogen.

1 **10.** A compound as recited in Claim 1, wherein said hormone domain
2 comprises testosterone.

1 **11.** A compound as recited in Claim 1, wherein said hormone domain
2 comprises luteinizing hormone.

1 **12.** A compound as recited in Claim 1, wherein said hormone domain
2 comprises chorionic gonadotropin.

1 **13.** A compound as recited in Claim 1, wherein said hormone domain
2 comprises follicle stimulating hormone.

1 **14.** A compound as recited in Claim 1, wherein said hormone domain
2 comprises melanocyte-stimulating hormone.

1 **15.** A compound as recited in Claim 1, wherein said hormone domain
2 comprises estradiol.

1 **16.** A compound as recited in Claim 1, wherein said hormone domain
2 comprises dopamine.

1 **17.** A compound as recited in Claim 1, wherein said hormone domain
2 comprises somatostatin.

1 **18.** A compound as recited in Claim 1, wherein said hormone domain, or said
2 lytic peptide domain, or both comprise D-conformation amino acid residues.

1 **19.** A compound as recited in Claim 18, additionally comprising a carrier
2 domain to facilitate uptake by the intestine when the compound is administered orally.

1 **20.** A compound as recited in Claim 19, wherein said carrier domain
2 comprises a vitamin B₁₂ domain.

1 **21.** A method for producing long-term contraception or sterility in an animal,
2 comprising administering to the animal an effective amount of: **(a)** a hormone selected
3 from the group consisting of gonadotropin-releasing hormone, bLH, and I-LHRH-III, and
4 **(b)** an effective amount of a lytic peptide.

1 **22.** A method as recited in Claim 21, wherein the lytic peptide is administered
2 after the hormone is administered.

1 **23.** A method as recited in Claim 21, wherein the animal is a mammal.

1 **24.** A method as recited in Claim 21, wherein the animal is a bird.

1 **25.** A method as recited in Claim 24, wherein the bird is a chicken or a turkey.

1 **26.** A method as recited in Claim 21, wherein the animal is an insect.

1 **27.** A method as recited in Claim 26, wherein the hormone and the lytic
2 peptide are expressed by an exogenous gene in a plant consumed by the insect.

1 **28.** A method as recited in Claim 21, wherein the hormone, or the lytic
2 peptide, or both comprise D-conformation amino acid residues.

1 **29.** A method as recited in Claim 28, wherein the compound containing
2 D-conformation amino acid residues additionally comprising a carrier domain to
3 facilitate uptake by the intestine when the compound is administered orally.

1 **30.** A method as recited in Claim 29, wherein the carrier domain comprises
2 a vitamin B₁₂ domain.

1 **31.** A method for producing long-term contraception or sterility in an animal,
2 comprising administering to the animal an effective amount of a compound comprising
3 a hormone domain and a lytic peptide domain, wherein said hormone domain is
4 selected from the group consisting of gonadotropin-releasing hormone, I-LHRH-III, and
1 bLH.

2 **32.** A method as recited in Claim 31, wherein the hormone domain is bonded
3 directly to the lytic peptide domain, without an intermediate linking domain joining the
4 hormone domain to the lytic peptide domain.

1 **33.** A method as recited in Claim 31, wherein the lytic peptide domain is
2 selected from the group consisting of a cecropin peptide, a melittin peptide, a defensin
3 peptide, a magainin peptide, a sarcotoxin peptide, and analogs of said peptides.

1 **34.** A method as recited in Claim 31, wherein the lytic peptide domain
2 comprises hecate.

1 **35.** A method as recited in Claim 31, wherein the compound has the
2 sequence SEQ. ID NO. 3.

1 **36.** A method as recited in Claim 31, wherein the compound has the
2 sequence SEQ. ID NO. 4.

1 **37.** A method as recited in Claim 31, wherein the compound has the
2 sequence SEQ. ID NO. 12 or SEQ. ID NO. 15.

1 **38.** A method as recited in Claim 31, wherein the animal is a mammal.

1 **39.** A method as recited in Claim 31, wherein the animal is a bird.

1 **40.** A method as recited in Claim 39, wherein the bird is a chicken or a turkey.

1 **41.** A method as recited in Claim 31, wherein the animal is an insect.

1 **42.** A method as recited in Claim 41, wherein the peptide is expressed by an
2 exogenous gene in a plant consumed by the insect.

1 **43.** A method of temporarily restoring fertility in a mammal that had been
2 made sterile by the selective destruction of gonadotropes in the pituitary, comprising
3 administering to the mammal an effective amount of gonadotropin-releasing hormone
4 or I-LHRH-III.

1 **44.** A method as recited in Claim 43, wherein fertility is restored in a mammal
2 that had previously been made sterile by administering to the animal an effective
3 amount of: **(a)** a hormone selected from the group consisting of gonadotropin-releasing
4 hormone, I-LHRH-III, and bLH, and **(b)** an effective amount of a lytic peptide.

1 **45.** A method as recited in Claim 43, wherein fertility is restored in a mammal
2 that had previously been made sterile by administering to the animal an effective
3 amount of a compound comprising a hormone domain and a lytic peptide domain,
4 wherein said hormone domain is selected from the group consisting of gonadotropin-
5 releasing hormone, I-LHRH-III, and bLH.

1 **46.** A plant containing an exogenous gene that encodes a peptide comprising
2 a hormone domain and a lytic peptide domain, wherein said hormone domain is
3 selected from the group consisting of gonadotropin-releasing hormone, I-LHRH-III, and
4 bLH.

1 **47.** A plant containing a first exogenous gene that encodes gonadotropin-
2 releasing hormone or that encodes I-LHRH or that encodes bLH, and a second
3 exogenous gene that encodes a lytic peptide.

1 **48.** A method for killing or inhibiting the growth of a cell in a hormone-
2 dependent or ligand-dependent tumor in a mammal, comprising administering to the
3 mammal an effective amount of the hormone or ligand on which the growth of the tumor
4 depends, and an effective amount of a lytic peptide.

1 **49.** A method as recited in Claim 48, wherein the lytic peptide is administered
2 after the hormone or ligand is administered.

1 **50.** A method as recited in Claim 48, wherein the hormone or ligand and the
2 lytic peptide are each administered by administering to the mammal a compound in
3 which the hormone or ligand and the lytic peptide are chemically bonded to one
4 another.

1 **51.** A method as recited in Claim 48, wherein the cell is part of an ovarian
2 cancer, and wherein the hormone or ligand comprises estradiol.

1 **52.** A method as recited in Claim 48, wherein the cell is part of a breast
2 cancer, and wherein the hormone or ligand comprises estradiol.

1 **53.** A method as recited in Claim 48, wherein the cell is part of a prostate
2 cancer, and wherein the hormone or ligand comprises testosterone.

1 **54.** A method as recited in Claim 48, wherein the cell is part of a
2 prolactinoma, and wherein the hormone or ligand comprises dopamine.

1 **55.** A method as recited in Claim 48, wherein the cell is part of a growth
2 hormone-secreting adenoma, and wherein the hormone or ligand comprises growth
3 hormone.

1 **56.** A method as recited in Claim 48, wherein the cell is part of a thyrotropin-
2 releasing hormone-secreting adenoma, and wherein the hormone or ligand comprises
3 thyrotropin-releasing hormone.

1 **57.** A method as recited in Claim 48, wherein the cell is part of a
2 gonadotropin-secreting adenoma, and wherein the hormone or ligand comprises
3 gonadotropin.

1 **58.** A method as recited in Claim 48, wherein the cell is part of a growth
2 hormone-secreting adenoma, and wherein the hormone or ligand comprises
3 somatostatin.

1 **59.** A method as recited in Claim 48, wherein the cell is part of a pituitary
2 adenoma, and wherein the hormone or ligand is selected from the group consisting of
3 gonadotropin-releasing hormone, I-LHRH-III, corticosteroid-releasing hormone, growth
4 hormone-releasing hormone, vasoactive intestinal polypeptide, and pituitary adenylate
5 cyclase activating peptide.

1 **60.** A method as recited in Claim 48, wherein the cell is part of a breast
2 cancer, and wherein the hormone or ligand comprises gonadotropin-releasing hormone
3 or I-LHRH-III.

1 **61.** A method as recited in Claim 48, wherein the cell is part of an ovarian
2 cancer, and wherein the hormone or ligand comprises gonadotropin-releasing
3 hormone, I-LHRH-III, or bLH.

1 **62.** A method as recited in Claim 48, wherein the cell is part of a prostate
2 cancer, and wherein the hormone or ligand comprises gonadotropin-releasing hormone
3 or I-LHRH-III.

1 **63.** A method for killing or inhibiting the growth of a cell in a hormone-
2 dependent tumor in a mammal, comprising administering to the mammal an effective
3 amount of a compound as recited in Claim 1, wherein the hormone domain of the
4 compound comprises the hormone on which the tumor is dependent.

1 **64.** A method for killing or inhibiting the growth of a cell in a hormone-
2 dependent tumor in a mammal, comprising administering to the mammal an effective
3 amount of a compound as recited in Claim 2, wherein the hormone domain of the
4 compound comprises the hormone on which the tumor is dependent.

1 **65.** A method for killing or inhibiting the growth of a cell in a hormone-
2 dependent tumor in a mammal, comprising administering to the mammal an effective
3 amount of a compound as recited in Claim 3, wherein the hormone domain of the
4 compound comprises the hormone on which the tumor is dependent.

1 **66.** A method for killing or inhibiting the growth of a cell in a hormone-
2 dependent tumor in a mammal, comprising administering to the mammal an effective
3 amount of a compound as recited in Claim 4, wherein the hormone domain of the
4 compound comprises the hormone on which the tumor is dependent.

1 **67.** A method for killing or inhibiting the growth of a cell in a hormone-
2 dependent tumor in a mammal, comprising administering to the mammal an effective
3 amount of a compound as recited in Claim 5, wherein the hormone domain of the
4 compound comprises the hormone on which the tumor is dependent.

1 **68.** A method for killing or inhibiting the growth of a cell in a hormone-
2 dependent tumor in a mammal, comprising administering to the mammal an effective
3 amount of a compound as recited in Claim 6, wherein the hormone domain of the
4 compound comprises the hormone on which the tumor is dependent.

1 **69.** A method for killing or inhibiting the growth of a cell in a hormone-
2 dependent tumor in a mammal, comprising administering to the mammal an effective
3 amount of a compound as recited in Claim 7, wherein the hormone domain of the
4 compound comprises the hormone on which the tumor is dependent.

1 **70.** A method for killing or inhibiting the growth of a cell in a hormone-
2 dependent tumor in a mammal, comprising administering to the mammal an effective
3 amount of a compound as recited in Claim 8, wherein the hormone domain of the
4 compound comprises the hormone on which the tumor is dependent.

1 **71.** A method for killing or inhibiting the growth of a cell in a hormone-
2 dependent tumor in a mammal, comprising administering to the mammal an effective
3 amount of a compound as recited in Claim 9, wherein the hormone domain of the
4 compound comprises the hormone on which the tumor is dependent.

1 **72.** A method for killing or inhibiting the growth of a cell in a hormone-
2 dependent tumor in a mammal, comprising administering to the mammal an effective
3 amount of a compound as recited in Claim 10, wherein the hormone domain of the
4 compound comprises the hormone on which the tumor is dependent.

1 **73.** A method for killing or inhibiting the growth of a cell in a hormone-
2 dependent tumor in a mammal, comprising administering to the mammal an effective
3 amount of a compound as recited in Claim 11, wherein the hormone domain of the
4 compound comprises the hormone on which the tumor is dependent.

1 **74.** A method for killing or inhibiting the growth of a cell in a hormone-
2 dependent tumor in a mammal, comprising administering to the mammal an effective
3 amount of a compound as recited in Claim 12, wherein the hormone domain of the
4 compound comprises the hormone on which the tumor is dependent.

1 **75.** A method for killing or inhibiting the growth of a cell in a hormone-
2 dependent tumor in a mammal, comprising administering to the mammal an effective
3 amount of a compound as recited in Claim 13, wherein the hormone domain of the
4 compound comprises the hormone on which the tumor is dependent.

1 **76.** A method for killing or inhibiting the growth of a cell in a hormone-
2 dependent tumor in a mammal, comprising administering to the mammal an effective
3 amount of a compound as recited in Claim 14, wherein the hormone domain of the
4 compound comprises the hormone on which the tumor is dependent.

1 **77.** A method for killing or inhibiting the growth of a cell in a hormone-
2 dependent tumor in a mammal, comprising administering to the mammal an effective
3 amount of a compound as recited in Claim 15, wherein the hormone domain of the
4 compound comprises the hormone on which the tumor is dependent.

1 **78.** A method for killing or inhibiting the growth of a cell in a hormone-
2 dependent tumor in a mammal, comprising administering to the mammal an effective
3 amount of a compound as recited in Claim 16, wherein the hormone domain of the
4 compound comprises the hormone on which the tumor is dependent.

1 **79.** A method for killing or inhibiting the growth of a cell in a hormone-
2 dependent tumor in a mammal, comprising administering to the mammal an effective
3 amount of a compound as recited in Claim 17, wherein the hormone domain of the
4 compound comprises the hormone on which the tumor is dependent.

1 **80.** A method for killing or inhibiting the growth of a cell in a hormone-
2 dependent tumor in a mammal, comprising administering to the mammal an effective
3 amount of a compound as recited in Claim 18, wherein the hormone domain of the
4 compound comprises the hormone on which the tumor is dependent.

1 **81.** A method for killing or inhibiting the growth of a cell in a hormone-
2 dependent tumor in a mammal, comprising administering to the mammal an effective
3 amount of a compound as recited in Claim 19, wherein the hormone domain of the
4 compound comprises the hormone on which the tumor is dependent.

1 **82.** A method for killing or inhibiting the growth of a cell in a hormone-
2 dependent tumor in a mammal, comprising administering to the mammal an effective
3 amount of a compound as recited in Claim 20, wherein the hormone domain of the
4 compound comprises the hormone on which the tumor is dependent.

1 **83.** A method for killing or inhibiting the growth of a cell in a mammal, wherein
2 the activity of the cell is dependent on the binding of a receptor on the cell surface to
3 a ligand, said method comprising administering to the mammal an effective amount of
4 the ligand on which the activity of the cell depends, and an effective amount of a lytic
5 peptide.

1 **84.** A method as recited in Claim 83, wherein the lytic peptide is administered
2 after the ligand is administered.

1 **85.** A method as recited in Claim 84, wherein the ligand and the lytic peptide
2 are each administered by administering to the mammal a compound in which the ligand
3 and the lytic peptide are chemically bonded to one another.

1 **86.** A method as recited in Claim 83, wherein the cell is a lymphocyte
2 responsible for an autoimmune reaction, and wherein the ligand comprises an epitope
3 to which the lymphocyte selectively binds.

1 **87.** A method as recited in Claim 83, wherein the cell is a virally-infected cell
2 that displays a surface receptor not displayed by otherwise similar, but uninfected cells,
3 and wherein the ligand selectively binds to the surface receptor.

1 **88.** A method for inhibiting the reproductive ability of an insect, comprising
2 administering to the insect an effective amount of a lytic peptide.

1 **89.** A method as recited in Claim 88, wherein the lytic peptide is selected from
2 the group consisting of a cecropin peptide, a melittin peptide, a defensin peptide, a
3 magainin peptide, a sarcotoxin peptide, and analogs of said peptides.

1 **90.** A method as recited in Claim 88, wherein the lytic peptide comprises L-
2 hecate.

1 **91.** A method as recited in Claim 88, wherein the lytic peptide comprises D-
2 hecate.

1 **92.** A method as recited in Claim 88, wherein the lytic peptide is expressed
2 by an exogenous gene in a plant consumed by the insect.

1 **93.** A method as recited in Claim 92, wherein the lytic peptide expressed by
2 the plant comprises L-hecate.

1 **94.** A plant containing an exogenous gene that encodes L-hecate.

1 **95.** A method as recited in Claim 23, wherein the mammal is a dog.

1 **96.** A method as recited in Claim 23, wherein the mammal is a cat.

- 1 **97.** A method as recited in Claim 23, wherein the mammal is a cow or bull.
- 1 **98.** A method as recited in Claim 23, wherein the mammal is a pig.
- 1 **99.** A method as recited in Claim 23, wherein the mammal is a horse.
- 1 **100.** A method as recited in Claim 23, wherein the mammal is a sheep.
- 1 **101.** A method as recited in Claim 23, wherein the mammal is a human.
- 1 **102.** A method as recited in Claim 21, wherein the animal is a mollusc.
- 1 **103.** A method as recited in Claim 102, wherein the mollusc is a zebra mussel.
- 1 **104.** A method as recited in Claim 102, wherein the mollusc is an oyster.
- 1 **105.** A method as recited in Claim 38, wherein the mammal is a dog.
- 1 **106.** A method as recited in Claim 38, wherein the mammal is a cat.
- 1 **107.** A method as recited in Claim 38, wherein the mammal is a cow or bull.
- 1 **108.** A method as recited in Claim 38, wherein the mammal is a pig.
- 1 **109.** A method as recited in Claim 38, wherein the mammal is a horse.
- 1 **110.** A method as recited in Claim 38, wherein the mammal is a sheep.

1 **111.** A method as recited in Claim 38, wherein the mammal is a human.

1 **112.** A method as recited in Claim 31, wherein the animal is a mollusc.

1 **113.** A method as recited in Claim 112, wherein the mollusc is a zebra mussel.

1 **114.** A method as recited in Claim 112, wherein the mollusc is an oyster.

1 **115.** A method for selectively killing gonadotrophic cells in the pituitary of an
2 animal, comprising administering to the animal: **(a)** an effective amount of a hormone
3 selected from the group consisting of gonadotropin-releasing hormone and I-LHRH-III,
4 and **(b)** an effective amount of a lytic peptide.

1 **116.** A method for selectively killing gonadotrophic cells in the pituitary of an
2 animal, comprising administering to the animal an effective amount of a compound
3 comprising a hormone domain and a lytic peptide domain, wherein said hormone
4 domain is selected from the group consisting of gonadotropin-releasing hormone and
1 I-LHRH-III.

1 **117.** A method for selectively killing neurons having gonadotrophic receptors
2 in an animal, comprising administering to the animal: **(a)** an effective amount of a
3 hormone selected from the group consisting of gonadotropin-releasing hormone,
4 I-LHRH-III, and bLH, and **(b)** an effective amount of a lytic peptide.

1 **118.** A method for selectively killing neurons having gonadotrophic receptors
2 in an animal, comprising administering to the animal an effective amount of a
3 compound comprising a hormone domain and a lytic peptide domain, wherein said
4 hormone domain is selected from the group consisting of gonadotropin-releasing
1 hormone, l-LHRH-III, and bLH.

1 **119.** A method as recited in Claim 21, wherein the animal is sexually immature.

1 **120.** A method as recited in Claim 31, wherein the animal is sexually immature.

1 **121.** A method as recited in Claim 23, wherein the mammal is sexually
2 immature.

1 **122.** A method as recited in Claim 38, wherein the mammal is sexually
2 immature.

1 **123.** A method as recited in Claim 48, wherein the cell is part of an ovarian
2 cancer, and wherein the hormone or ligand comprises l-LHRH-III.

1 **124.** A method as recited in Claim 48, wherein the cell is part of a prostatic
2 cancer, and wherein the hormone or ligand comprises l-LHRH-III.

1 **125.** A method as recited in Claim 48, wherein the cell is part of a breast
2 cancer, and wherein the hormone or ligand comprises l-LHRH-III.

1 **126.** A method as recited in Claim 48, wherein the cell is part of an endometrial
2 cancer, and wherein the hormone or ligand comprises l-LHRH-III.

1 **127.** A compound as recited in Claim 1, wherein said hormone domain
2 comprises bLH.

1 **128.** A method as recited in Claim 48, wherein the cell is part of a testicular
2 cancer, and wherein the hormone or ligand comprises gonadotropin-releasing
3 hormone, l-LHRH-III, or bLH.